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ULTRA HIGH SPEED PROTECTION AND SPEED CONTROL SYSTEM OF DC MOTOR USING LABVIEW

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ABSTRACT
The software developed is very useful and by interfacing it using DAQ card, very low cost DC motor protection can be achieved. Further it shows monitoring of electrical measurements.

KEYWORDS: Speed control of DC motor, DC motor protection using LabVIEW.

INTRODUCTION
D.C Motors are the guideline building piece in particular business wanders. Their breakdown won't simply incite repair or substitution of the motor, also affect major money related disasters due to unpredicted downtime process. Strong and speedy affirmation of d.c. motors is crucial for diminishing the motor breakdown rate and extending a motor's lifetime. Standard d.c. certification techniques are not too viable when stood out from the front line of automated significantly capable NI LabVIEW based protection structure. In this wander the inspector will make modernized d.c. motor security which not simply guarantees the motors against particular kind of issues moreover demonstrates the sort of lack on the front board. At the point when issue fragment is changed it again starts the right working of motor and guarantees it against atypical conditions each one of the times [1], [2].

DIFFERENT TYPES OF FAULT ON DC MOTORS
There are lot of different faults occur on DC motor. Some main types of faults are as follows:
Over voltage
Over current
Over heat
Internal short circuit
Over voltage protection etc.
Over load protection

TOOLS AND SOFTWARES USED
LabVIEW
LabVIEW (short for Laboratory Virtual Instrument Engineering Workbench) is a structure layout stage and change environment for a visual programming lingo from National Instruments.

LabVIEW is an exceedingly beneficial change environment for making custom applications that interface with bona fide data or banners in fields, for instance, science and planning. The net outcome of using a contraption, for instance, LabVIEW is that higher quality assignments can be done in less time with less people included [3],[4].

INFERENCES DRAWN OUT OF THE LITERATURE REVIEW
The investigator after going through a large number of literatures divulges the following inferences [5],[6],[7],[8].

- DC engines are a standout amongst the most utilized engine.

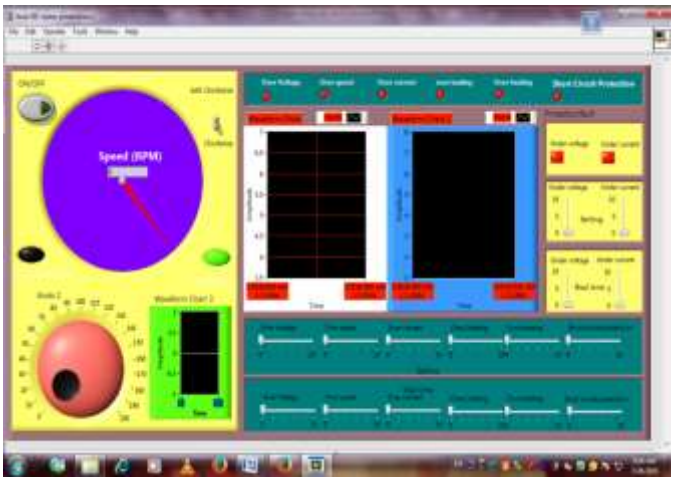
- The speed control and security of DC engine requires parcel of complex hardware which are unreasonable and massive.
- As engines are excessive so just programming based insurance framework is not adequate and dependable. So there are necessities for programming based assurance arrangement of DC engines.
- In commercial enterprises as often as possible the pace and bearing of DC engines are should be changed. These are done essentially by utilizing static gadgets like rectifier, chopper and so forth. These are nonlinear loads so it produces parcel of music furthermore drops down the force quality.
- Hence some dependable programming based velocity controlling framework for DC engine is need in the

OBJECTIVE

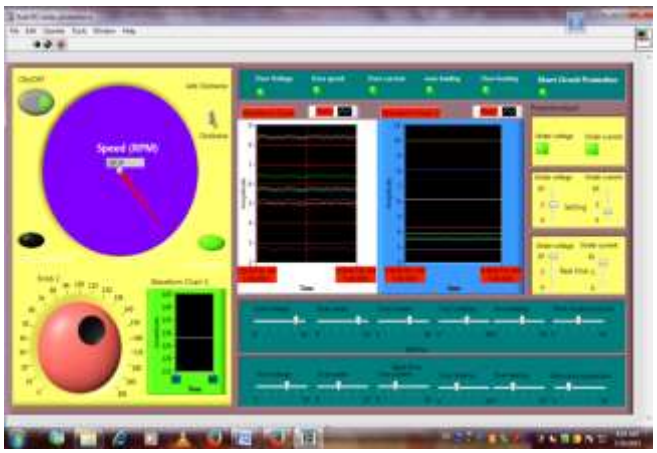
1. To develop low cost high performance virtual protection system for DC motors.
2. To develop virtual speed control system for DC motors.
3. To develop alarming/indicating mechanism for different faults.

SOFTWARE DEVELOPED FOR DC MOTOR PROTECTION AND SPEED CONTROL

The investigator has grown exceedingly capable programming which can ensure DC engine against various shortcomings furthermore can control its velocity in both directions. The GUI of the product is given underneath.



The working of the software is shown in the figure below



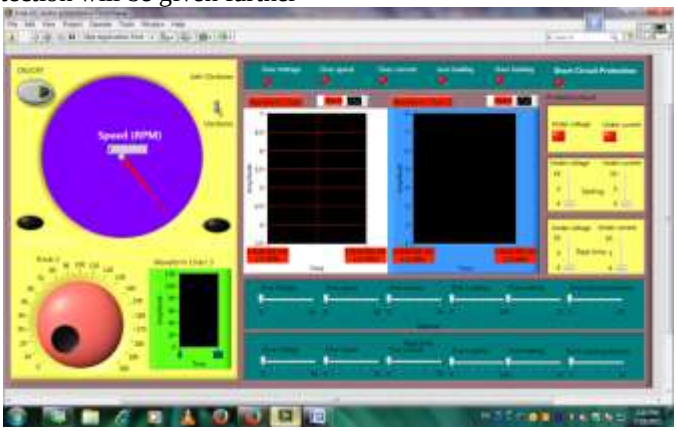
From the figure above, it is clear that any DC motor can be protected against over voltage, etc. very easily.

(a) Front panel of software

The front panel of the software is given below. It has following protection system:

i) Over voltage protection
ii) Over speed protection
iii) Over current protection
iv) Over loading protection
v) Overheating protection
vi) Short circuit protection
vii) Under voltage protection
viii) Under current protection

The details of different protection will be given further



Proper functioning of Software

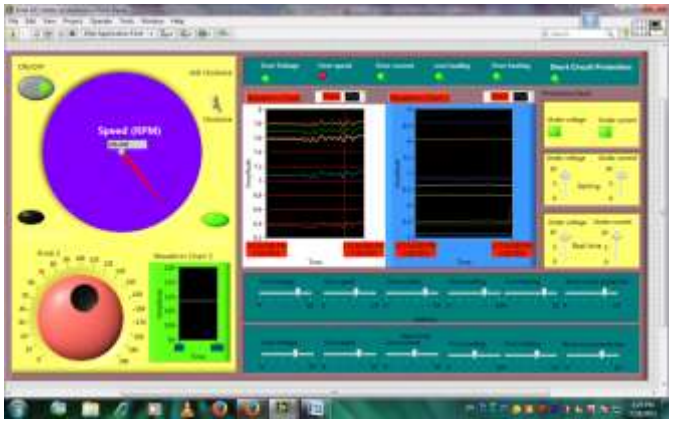
In the Fig. given below, the front panel is shown in working condition. It is clear that when no fault is there, the software is running properly.

(a) Over voltage

In the fig. given below, Over voltage protection is shown. It is clear that in case of overvoltage the software has disconnected the motor and has protected it properly.

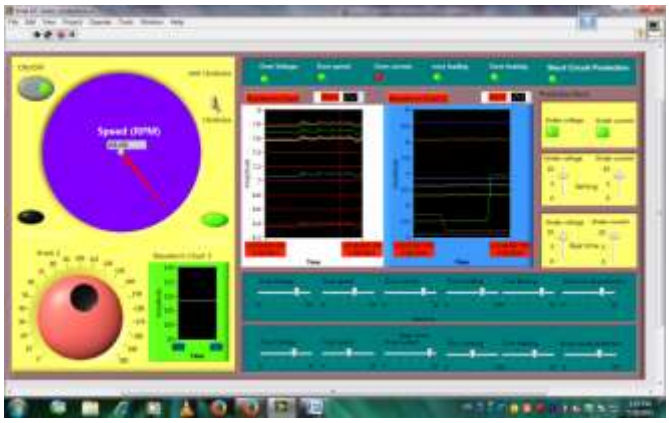
(b) Over speed protection

In the fig. given below, Over speed protection is shown. It is clear that in case of over speed the software has disconnected the motor and has protected it properly.



(c) Over current protection

In the fig. given below, Over current protection is shown. It is clear that in case of over current the software has disconnected the motor and has protected it properly.



(d) Over loading protection

In the fig. given below, Over loading protection is shown. It is clear that in case of over loading the software has disconnected the motor and has protected it properly.

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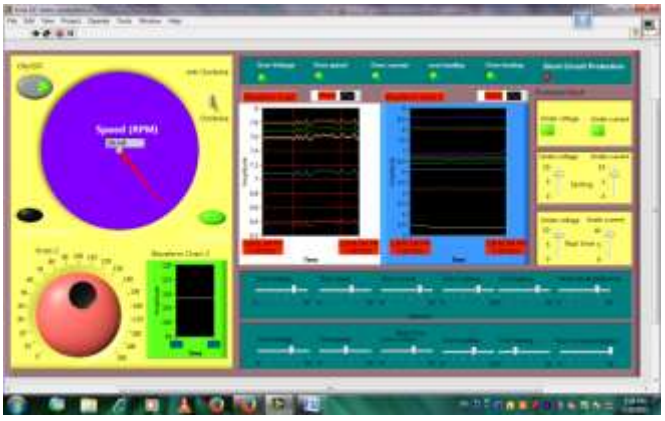
(e) Over heating protection

In the fig. given below, over heating protection is shown. It is clear that in case of over-heating the software has disconnected the motor and has protected it properly.

(f) Short circuit protection

In the fig. given below, short circuit protection is shown. It is clear that in case of short circuit the software has disconnected the motor and has protected it properly.

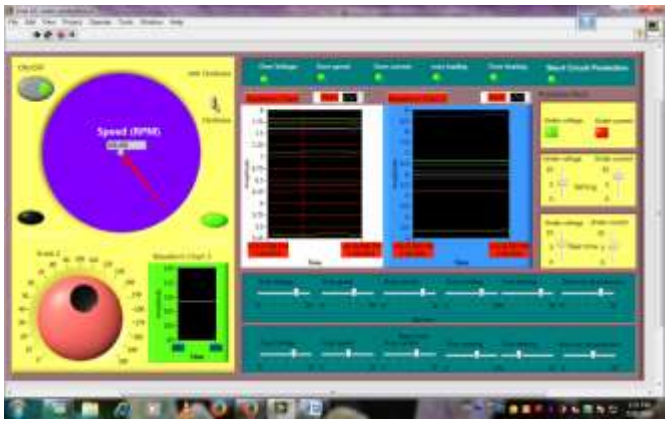


(g)

(h) Under voltage protection

In the fig. given below, under voltage protection is shown. It is clear that in case of under voltage the software has disconnected the motor and has protected it properly.

(i) Under current protection
In the fig. given below, under current protection is shown. It is clear that in case of under current the software has disconnected the motor and has protected it properly.



CONCLUSION

The software developed is very useful and by interfacing it using DAQ card, very low cost DC motor protection can be achieved. Further it shows monitoring of electrical measurements.

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